

GP-300576

ROLLING REGENERATION DIESEL PARTICULATE TRAP

ABSTRACT OF THE DISCLOSURE

A rolling regeneration diesel particulate filter and filtering process that utilizes NO produced in the process to generate additional amounts of NO₂ than the NO₂ produced by the diesel engine. The process includes the step of flowing diesel engine combustion exhaust through a filter system including a first section and a second section. The first section is positioned upstream of the second section with respect to the direction of the flow of the diesel engine exhaust through the filter. The first section includes a foam constructed and arranged to trap carbon-based particulates in the exhaust. A first catalyst is carried by the foam to promote the conversion of NO in the exhaust from the diesel engine to NO₂. The first catalyst also promotes the reaction of NO₂ with at least a portion of the carbon-based particulates trapped by the foam to form CO and NO. The first catalyst carried by the foam also promotes the oxidation of CO to CO₂, and the oxidation of NO, generated by the reaction of NO₂ with carbon, to generate additional amounts of NO₂. The additional amounts of NO₂ are also utilized to oxidize the carbon-based particulates. The second section of the filter system includes a wall flow monolith having a plurality of through hole cells formed therein running the longitudinal length of the monolith. The monolith is constructed and arranged to trap particulates in the exhaust and to promote the reaction of NO₂ and carbon to produce NO and CO. The ceramic foam may also be received in and surrounded by the wall flow filter.